

REMARKS

Applicant preliminarily amends the original claims as filed with the amendment of Claims 1-2 and the addition of Claims 3-20. Support for the amended claims can be found throughout the specification.


Entry of the proposed preliminary amendment is respectfully requested. Attached hereto is a marked-up version of the changes made to the claims by the current amendment. The attached page is captioned "**Version with markings to show changes made.**"

Favorable consideration is respectfully solicited.

Respectfully submitted,
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Signed: _____


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Versions With Markings to Show Changes Made

IN THE CLAIMS:

Claims 1-2 have been amended and new Claims 3-20 have been added as follows:

1. (Amended) A system for caching of ~~web pages~~, data for a plurality of clients coupled to at least one data source with data resources each identified by a corresponding uniform resource locator (URL); and the system comprising:

~~a coherency management module monitoring data requests from a plurality of clients for web pages and maintaining a cache of signatures corresponding thereto, and the coherency management module utilizing the signatures to determine that an update of at least one of the web pages has occurred, and responsive to the determination sending an update notice; and~~

~~at least one cache module coupled to selected clients among the plurality of clients to provide a cache of web pages~~ cache data resources requested by the plurality of selected clients along with corresponding URLs, and the at least one cache module responsive to the update notice from the coherency management module to update the associated web page in the cache. messages identifying URLs of data resources requiring an update, to tag cached copies of the data resources identified in the update messages with a "stale" tag to indicate a lack of coherency between the cached copies and the originals of the data resources in the at least one data source; and

~~a coherency management module coupled to the at least one data source to monitor data resource copies supplied by the at least one data source in response to requests by the selected clients and to send to the at least one cache module the update messages identifying each URL for which successive requested copies of the corresponding data resource differ from one another.~~

2. (Amended) ~~A method for caching of web pages, comprising: The system of Claim 1,~~
wherein the at least one cache module further comprises:

~~monitoring data requests from a plurality of clients for web pages;
generating a signature for each of the web pages;
utilizing the successive signatures of at least one of the web pages to determine
that an update of the at least one of the web pages has occurred;
sending an update notice responsive to said utilizing act.~~

an update fetcher to fetch an update from the at least one data source of cached copies
tagged with a "stale" tag.

3. (New) The system of Claim 1, wherein the at least one cache module further
comprises:

an update scheduler to schedule data resource updates to correspond with an
availability of the at least one cache module; and

an update fetcher responsive to a data resource update scheduled by the update
scheduler to fetch updates from the at least one data source of cached copies of the data
resources marked with the "stale" tag.

4. (New) The system of Claim 1, wherein the coherency management module further
comprises:

a signature generator to generate a digital signature for each data resource copy
supplied by the at least one data source in response to requests by the selected clients;

a signature cache to cache the digital signatures generated by the signature generator
along with corresponding URLs, and to tag with the stale tag each URL for which successive
digital signatures for the corresponding data resource differ from one another; and

an updater to send update messages to the at least one cache module for those digital
signatures with corresponding URLs tagged with the stale tag and to remove the
corresponding stale tags from the signature cache upon sending the update messages.

5. (New) The system of Claim 4, wherein the digital signature comprises a hash of the corresponding data resource.

6. (New) The system of Claim 1, wherein the at least one cache module includes a first cache module coupled to a first set of selected clients among the plurality of clients and a second cache module coupled to a second set of selected clients among the plurality of clients, and wherein further the coherency management module comprises:

a logger to maintain a log table which correlates the first cache module with the URLs requested by the first set of selected clients and the second cache module with the URL's requested by the second set of selected clients;

a signature generator to generate a digital signature for each data resource copy supplied by the at least one data source in response to requests by the first and the second sets of selected clients;

a signature cache to cache the digital signatures generated by the signature generator along with corresponding URLs, and to tag with the stale tag each URL for which successive digital signatures for the corresponding data resource differ from one another; and

an updater to send update messages to a corresponding one of the first and second cache module associated with URLs in the log table for which the corresponding signature in the signature cache includes the stale tag and the updater to remove the corresponding stale tags from the signature cache upon sending the update messages.

7. (New) The system of Claim 1, wherein the data resource comprises a web page.

8. (New) The system of Claim 1, with coherency management module located within at least one of: a server, a gateway, a router and a switch, coupled to the data source.

9. (new) The system of Claim 1, wherein the at least one cache module comprises a plurality of cache modules each coupled to corresponding ones of the plurality of clients and

each responsive to the update messages from the coherency management module to tag with the stale tag the corresponding cached copies of the data resources identified in the update messages.

10. A method for caching data for a plurality of clients coupled to at least one data source with data resources each identified by a corresponding uniform resource locators (URL); and the method comprising the acts of:

caching the data resources together with corresponding URLs requested by the selected clients among the plurality of clients;

generating update messages identifying in the requests from the selected clients each URL for which successive requested copies of the corresponding data resource supplied by the at least one data source differ from one another;

tagging with a "stale" tag the cached copies of the data resources cached in the caching act and identified in the update messages generated in the generating act, and with the stale tag indicating a lack of coherency between the tagged cached copy and the corresponding original of the data resource in the at least one data source.

11. The method of Claim 10, further comprising the act of:

fetching from the at least one data source updated copies of data resources cached in the caching act and tagged in the tagging act with a stale tag.

12. The method of Claim 10, further comprising the acts of:

scheduling data resource updates; and

fetching in response to a data resource update scheduled in the scheduling act, updated copies from the at least one data source of data resources cached in the caching act and tagged in the tagging act with a stale tag.

13. The method of Claim 10, wherein the generating act further comprises the acts of:

creating a digital signature for each data resource copy supplied by the at least one data source in response to requests from the selected clients;

caching the digital signatures created in the creating act together with a corresponding URL;

labelling with the "stale" tag each corresponding URL for which successive digital signatures cached in the act of caching digital signatures differ from one another;

producing update messages identifying each URL labelled with a stale tag in the act of labelling; and

removing the stale tags from the URLs identified in the update messages produced in the act of producing.

14. The method of Claim 13, wherein each digital signature created in the act of creating comprises a hash of the corresponding data resource copy.

15. The method of Claim 10, wherein the caching act further comprises the act of:

storing the cached data resources together with corresponding URLs at discrete locations each associated with a corresponding subset of the selected clients among the plurality of clients.

16. The method of Claim 15, wherein the generating act further comprises the acts of:

maintaining a log table which correlates each discrete location of cached data resources with the URLs requested by the corresponding subset of the selected clients associated with each discrete location;

creating a digital signature for each data resource copy supplied by the at least one data source in response to requests from the first and the second sets of selected clients;

caching the digital signatures created in the creating act together with a corresponding URL;

labelling with the "stale" tag each corresponding URL for which successive digital signatures cached in the act of caching digital signatures differ from one another;

producing update messages which identify URLs labelled with a stale tag in the act of labelling;

targeting update messages produced in the act of producing to the discrete locations using the log table maintained in the act of maintaining to correlate each URL identified in the update messages with at least one of the discrete locations; and

removing the stale tags from the URLs identified in the update messages produced in the act of producing.

17. The method of Claim 10, wherein the data resource comprises a web page.

18. Computer software, tangibly embodied in a computer-readable medium or a propagated carrier signal, for caching data for a plurality of clients coupled to at least one data source with data resources each identified by a corresponding uniform resource locators (URL); and the software comprising instructions to perform the following operations:

caching the data resources together with corresponding URLs requested by the selected clients among the plurality of clients;

generating update messages identifying in the requests from the selected clients each URL for which successive requested copies of the corresponding data resource supplied by the at least one data source differ from one another;

tagging with a "stale" tag the cached copies of the data resources cached in the caching act and identified in the update messages generated in the generating act, and with the stale tag indicating a lack of coherency between the tagged cached copy and the corresponding original of the data resource in the at least one data source.

19. (New) The software of Claim 18, further comprising instructions for:

fetching from the at least one data source updated copies of data resources cached in the caching act and tagged in the tagging act with a stale tag.

20. (New) The software of Claim 18, further comprising instructions for:

scheduling data resource updates; and

fetching in response to a data resource update scheduled in the scheduling act, updated copies from the at least one data source of data resources cached in the caching act and tagged in the tagging act with a stale tag.